TELLUS INSTITUTE
Resource and Environmental Strategies

Advancing Resource Management Contracting in Massachusetts: Reinventing Waste Contracts and Services

Executive Summary

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EXECUTIVE SUMMARY

This report summarizes a project sponsored by the Massachusetts Department of Environmental Protection (DEP) Bureau of Waste Prevention to assess the potential of using Resource Management contracting at nine case study organizations: Acushnet Company, Fitchburg State College, General Dynamics Defense Systems (GDDS), Harvard University, Lemuel Shattuck Hospital, One Beacon Street, Stop & Shop, Texas Instruments, and Verizon. Further detail on each of these companies is provided in Section 1.2.

Resource Management (RM) is a strategic alternative to disposal contracting that directs and provides incentives for external contractors to emphasize cost-effective resource efficiency through prevention, recycling, and recovery while limiting hauling and disposal. For RM to become a standard practice it needs to be tested and proven.

The project is being executed in two phases. Phase 1 (embodied in this report) assesses RM contracting practices and potential in a wide range of Massachusetts' organizations. Phase II of the project will provide direct contracting assistance to a number of companies to implement and test RM on the ground.

DEP's rationale for the project is to consider RM as an innovative non-regulatory, market-based method to reduce waste generation and increase recovery of useful materials. In the past five years the recycling rate in Massachusetts has increased only 1-2 percent each year, preventing the state from achieving its Year 2000 recycling goals. RM may help boost recycling rates and, more importantly, create a vehicle for business partnerships to engage in "upstream" source reduction opportunities that will be essential to reach the ambitious goal of 70 percent waste reduction by 2010 articulated in the State's new *Beyond 2000, Solid Waste Master Plan*. RM is expected to play a part in a multi-pronged strategy laid out in the *Master Plan* to promote more sustainable practices in communities to reduce the need for landfills, combustion facilities, or waste exports.

RM Overview

Most of Massachusetts' waste stream is addressed through solid waste contracts where waste disposal volumes or service levels drive the compensation for solid waste contractors. In such arrangements, the financial incentives of the waste generator and the solid waste contractor are at odds; while the waste generator has an incentive to decrease waste quantities, the contractor is better off handling continuously increasing quantities of waste. These conflicting objectives work to impede serious progress in waste reduction.

Resource Management (RM) is a strategic alternative to disposal contracting that emphasizes cost-effective resource efficiency through prevention, recycling, and recovery while limiting hauling and disposal. RM is premised on the idea that contractors will pursue resource efficiency when provided the correct financial incentives. RM contracts align waste generator and contractor incentives by placing a "cap" on disposal compensation and providing opportunities for both the contractor and the generator to profit from resource efficiency innovations. Thus, if a contractor identifies cost-effective

recycling markets for disposed materials, or techniques for preventing waste altogether, they receive a portion of the savings resulting from the innovation. This arrangement enhances recovery of readily recyclable materials such as corrugated cardboard and wood pallets, while also encouraging source reduction and market development for difficult to recover materials such as paint sludge and solvents. Ultimately, this compensation scheme harmonizes the incentives of both parties: waste generators and their contractors benefit from resource efficiency innovations. A useful manner to better understand RM is to compare it to how most organizations contract for waste and recycling services. Primary features of traditional and RM contracts are shown in Table ES-1.

Table ES-1: Distinguishing Features of Waste Contracts/Recycling vs. RM Contracts

Features	**Traditional Waste Contracts and Recycling Arrangements**	**RM Contracts**
Contractor Compensation and Incentive Structure	▪ Unit price based on waste weight and/or number of pick-ups ▪ Recycling often non-contractual "add-on" service provided by same of other contractors Contractor Incentive: Maximize waste service and volume; no integration with recycling	▪ Constrain/cap waste hauling/disposal service to "cost-recovery" basis (eliminates profitability) ▪ Performance bonuses based on (and financed from) documented resource efficiency savings Contractor incentive: Seek savings through recycling/diversion and other resource efficiency innovations
Waste Generator-Contractor Relationship	Minimal interface and collaboration between generator (and other stakeholders influencing waste) and contractor	Strategic alliance: waste generator and contractor work together to derive value from resource efficiency
Scope of Service	Container rental and maintenance, hauling, and disposal or processing. Contractor responsibilities begin at the dumpster and end at landfill or processing site.	Services addressed in traditional hauling and disposal contracts as a last resort, plus services that inform and influence waste generation (i.e., product/process design, material purchase, internal storage, education on material use and handling, data management, reporting).

The lack of interconnection between waste hauling/disposal contracts and recycling/diversion programs often translates to contractors competing over management of a customer's waste stream. This is exacerbated by the informal nature of many recycling programs, which are often provided as "free" services. Often, multiple contractors are responsible for their own limited portion of the total waste or recycling picture, impeding a systems approach in which coordinated price signals for trash, recycling, and other services offered under an RM program are mutually reinforcing in support of resource efficiency goals. The RM contractor has clear "incentives" and is

compensated as a "gatekeeper" to assure these services are thus aligned even though some services may be sub-contracted out to other specialized contractors.

Incentives are commonly financed with savings on disposal fees, hauling costs, and increased recycling revenues. Other cost savings that can be used for incentives include reduced storage requirements resulting from more effective ordering, volume price discounts, and more economical material use. As the RM moves further "upstream" the value of these savings and the profitability for both the RM contractor and customer under a gain-sharing arrangement can be quite large. The underlying objective is to divorce the contractor's profit incentive from providing increasing trash service.

Summary of RM Nationally

In 1997, the General Motors Corporation (GM) launched a RM contracting initiative in response to both corporate waste reduction goals, and limited and uncoordinated resource efficiency efforts among GM's 72 North American facilities. As a longstanding recycler that recovers and reuses virtually all scrap metals, GM's premise in launching its RM initiative was deceptively simple: there are no waste streams, only wasted resources. To achieve cost-effective conservation of plant resources, GM restructured its disposal contracts such that disposal costs were capped and financial incentives were provided for resource efficiency innovations. To date GM has executed RM contracts at two-thirds of its North American facilities, with all remaining facilities scheduled to come on line by the end of 2001. Plants that have had RM contracting in place for a year or more have realized a 20% reduction in overall waste generation (30,000 tons), a 65% increase in recycling (from 50,000 tons to over 82,000 tons), a 60% decrease in disposal, and a 30% decrease in waste management costs.

Building on GM's success with RM, Tellus Institute launched a national initiative to assess and advance RM practice in a range of institutional, commercial, municipal, and industrial settings. Sponsors for these ongoing projects include: the Nebraska Environmental Trust, the Florida Department of Environmental Protection, the Iowa Waste Management Assistance Divisions, the Missouri Department of Natural Resources, the Massachusetts Department of Environmental Protection, and US EPA's WasteWise program (Office of Solid Waste). A cumulative result of these projects is a set of standard RM practices any organization interested in RM should follow. Three major activities are performed through five practices: (a) establish a baseline of waste management/recycling levels and review current contract structures; (b) provide an exclusive scope to a single RM contractor; and (c) create incentives that reward the RM contractor for resource efficiency.

Table ES-2: Summary of Standard RM Practices

FUNCTION	RM PRACTICE	DESCRIPTION
Contract Preparation	1. Establish Baseline Cost, Performance, and Service Levels	♦ Define current service scope and levels (hauling and tonnage) ♦ Identify existing contract compensation methods ♦ Validate service levels with total costs through annual baseline review/update ♦ Establish cost and performance benchmarks and goals
Transform Scope and Contractor/ Customer Relationship	2. Align all services to support resource efficiency	♦ Provide all responsibility to one contractor to coordinate, integrate, and formalize all waste and recycling contracts and services to ensure that all are mutually supportive of organizational resource efficiency goals
	3. Rethink Contractor Role and Relationship	♦ Allow or require bidders to submit operations plans for achieving specified improvements in existing operations, provide latitude in work specification ♦ Engage RM contractor in daily RM operations and responsibilities ♦ Allow or require contractor to interface with internal stakeholders (engineers, legal staff, purchasing, other contractors) to devise cost-effective solutions, assure buy-in, and foster organizational learning ♦ Establish quarterly meetings to report on performance and resolve issues
New Basis for Compensation	4. Establish Transparent Pricing for Services	♦ Delineate pricing information to specific services such as container maintenance, container rental, hauling, disposal, etc. This allows variable price savings, such as "avoided hauling and disposal" to flow back to generator and/or be used as a means for financing performance bonuses.
	5. Provide Direct Financial Incentives for Resource Efficiency	♦ Establish compensation that allows contractor to realize financial benefits for service improvements and resource efficiency innovations that result in cost savings ♦ De-couples contractor profitability from trash disposal and service levels

Massachusetts Project – Phase I

Phase I of this project sought to assess the potential of a strategic alternative to disposal contracting called Resource Management (RM). The project is centered on specific findings from nine case studies conducted at leading Massachusetts's organizations. Information from these case studies served as direct input to meet the three primary objectives of this report:

1. Benchmark existing contracting practices to provide a glimpse into the "state of waste and recycling contracting" in Massachusetts businesses. This involved assessing the degree to which participating organizations had already instituted elements of RM.

2. Baseline existing waste disposal, recycling levels, and associated costs within each organization, and characterize opportunities for increased diversion and cost savings that may be possible by adopting RM contracting.
3. Evaluate how RM practices can be applied to performance-based contracts in which RM contractors are compensated on the basis of cost savings from resource efficiency improvements.

Baseline Waste and Recycling Contracts

Tellus met with all partner organizations to baseline existing waste disposal, recycling levels, and characterize trash and diversion programs in each partner organization. Attached to this report are the "technical briefs" specific to each organization. Each details the scope of services received, summarizes formal contracts and informal service arrangements for waste and recycling, reviews materials recycled, and service levels and tonnages for calendar year 2000. The briefs also discuss the availability of information needed to quantify current diversion, set future diversion goals, and establish equitable compensation in RM contracts.

The nine case study organizations have a wide range of diversion rates: four have diversion rates above 60% (One Beacon, Stop and Shop, Texas Instruments and Verizon); three have rates ranging from 18%-28% (Fitchburg, General Dynamics, and Harvard); and two have diversion rates less than 5% (Acushnet and Shattuck Hospital). Thus, the case studies offered an excellent opportunity to evaluate the potential of RM for Massachusetts' organizations that fall anywhere along this spectrum. Looking at all nine case studies together, some general findings emerged:

- The structure of solid waste and recycling contracts vary within different organization. Some organizations had formal contracts and others had "handshake" agreements.
- Data reporting is generally lacking. Billing information often served as the sole source of information on service levels and tonnage.
- Contracting is largely fragmented (e.g., waste and recycling contracts are executed separately with organizations typically more focused on waste).
- Recycling is typically viewed as an add-on to waste services or as a cost neutral proposition. Thus, it is typically viewed as something an organization should pursue to "do the right thing".
- All specific and contracted services started at the point they picked up waste or recyclables at the dumpster. Most source separation activities are done internally.

Potential for Cost Savings, Enhanced Recycling and Improved Services Using RM

All organizations could benefit from more systematic RM contracting. As shown in the following table, significant cost savings exist for all the case study organizations,

including those with high base diversion rates. For these nine partner organizations alone, there exists the potential to divert an estimated 5,000 tons from regional landfills and incinerators, at a net cost savings of roughly $500,000. These funds can be used to create incentives for RM contractors to initiate recycling and other more resource efficient business practices.

Net savings range in value from $4,062 for Verizon to nearly $272,000 for Harvard University. The majority of these cost savings (90% plus in many cases) stem from the avoided hauling/ disposal component. It is these savings that are used as incentives for the RM service provider.

Table ES-3: Summary of Diversion/Cost Saving Opportunities for Partner Organizations, 2000*

	Shattuck Hospital	General Dynamics	Harvard University (1)	Texas Instruments	Acushnet Company	Verizon	Stop & Shop	Fitchburg State (2)
Base Diversion Rate	<1%	27%	28%	60%	5%	59%	72%	18%
Est. Additional Tons Recyclable/Recoverable	435	62	3143	355	593	53	200	143
Resulting Diversion Percentage	45%	43%	53%	75%	25%	74%	83%	31%
Percent Increase in Diversion Tonnage	5438%	63%	84%	24%	366%	25%	16%	69%
Percent Decrease in Disposal Tonnage	44%	22%	33%	37%	20%	37%	40%	31%
Savings -- "Gain-Sharing" Potential	$31,195	$27,280 (3)	$271,973	$30,605	$65,011(4)	$4,062	$10,551	$18,500
Savings as a Percent of Affected Base Service Cost	39%	48%	29%	18%	25%	42%	13%	31%

* One Beacon Street does not follow the standard format and could not be summarized in above table.

A logical question to ask is: "Why aren't companies taking advantage of these savings on their own?" A primary reason is because these savings are relatively small (typically less than 1%) compared to total operating costs and organizations typically focus on reducing larger cost centers. This is particularly true in today's "downsized" environment where individuals are already overworked and human resources are at a premium. However, as our assessment shows, while diversion savings may be relatively insignificant for a waste generator, they represent large potential increases in contract value for an RM contractor (13%-48%).

Conclusion

The results of this project suggest that RM has potential in a wide variety of commercial, industrial, and institutional settings. While an emerging model, RM continues to make in-roads as an alternative to traditional waste and recycling contracting practices. RM holds the promise of redefining the nature of services provided by the waste industry and the way waste-related companies generate profit.

Some of the broad conclusions based on the first phase of this project include:

- Most organizations do not have contracts that allow them to realize the full financial benefits of diversion. Many partner organizations have focused on logistics and have achieved cost reductions by switching from regularly scheduled pick-ups to an "on-call" basis. However, few have completely unbundled fee structures that allow them to realize the total savings from diversion.
- External contractors have no ability or incentive to affect internal operations that would tap into the uncaptured value of recyclable commodities and avoided disposal fees.
- Performance-based methods (emphasizing quantifiable, measurable performance targets and quality standards) are absent from all waste/recycling contracts.
- The uncaptured value of recyclable commodities in the state's waste stream combined with avoided disposal fees can incentivize RM contractors and be a boon to both customers and vendors.
- RM fosters a "system view" of resources- allowing business to make greater resource efficiency changes and associations. Traditional solid waste practices pick up trash and recyclables at the curb or loading dock, thus doesn't allow room for making this connection.
- RM has the ability to help meet state waste reduction goals

The most successful programs have devoted focused, ***internal*** resources to managing contracts/contractors and initiating recycling programs. One partner organization, One Beacon, has some of the RM practices in place. This program, managed by their property management firm, has successfully established transparent pricing to recoup savings from diversion. These savings are then used to initiate internal recycling programs. Similarly, Stop and Shop has devoted two full time employees to their waste and recycling activities. In today's competitive climate, however, many organizations simply cannot devote internal resources to non-core activities such as waste and recycling. The key element of RM is to provide incentives to an *external* RM contractor to drive internal recycling and source reduction programs. The contractor is paid for supplying these additional services through cost savings from improvements to the current system. Thus even if the overall cost savings are small or cost-neutral, customers will obtain a much higher level of service for the same amount of money. These services allow organizations to divert a higher percentage of their waste stream, to receive better data to manage waste and recycling activities, and to establish a system that seeks continuous improvement.

Unresolved Questions

Clearly, there is still much work to be done for RM to become a standard practice. An overall conclusion that can be taken from this initial research is that widespread diffusion of RM holds great promise for harnessing the power of the market to achieve resource efficiency goals. Despite this potential, we have also learned through this project and other ongoing research throughout the US, that at least three major factors are limiting RM adoption:

- *Lack of knowledge, visibility, and understanding.* Although the performance contracting components of RM are well established in other applications, the concept is relatively new to the solid waste field.

- *Hauling and disposal is cheap compared to other organizational costs.* Hauling and disposal contracts typically represent less than one-half of a percent of waste-generating organizations' operating costs. Thus, organizations logically focus their efforts and resources on reducing larger operating costs and developing competencies in areas fundamental to their core business activity.

- *Lack of profit incentives for service providers to provide RM services.* While service providers could provide profitable and cost-effective resource efficiency service, conventional contracts do not provide the compensation or incentives to diverge from an established business approach that neither their clients nor any other third party organization are pushing them to change.

In addition there are lingering questions about RM. What are the limits to the model and where does it work best? How well does RM contracting work in small businesses? What are the constraints in achieving some of the strategic, upstream potential of RM (source reduction, environmentally preferable purchasing, design)? What are some of the organizational barriers customers must be aware of? These questions will best be answered empirically.

This project has done much to baseline current contracting practices, evaluate RM's financial and waste reduction potential, and provide standard contracting practices to assist organizations in moving toward RM. However, in order for RM to take hold, resources must be provided to both potential customers and suppliers of RM services to create a sustainable, long-term market for RM services. This can be accomplished most effectively by accelerating the adoption of RM services by organizations statewide. Once the model is established and success of the model proven in real world applications, additional education and outreach can quickly spur demand. On the "supply" side, once some initial momentum is obtained, the model will also be replicated through RM service providers actively promoting such services[1]. Thus, proving RM "in the field" will go far in reducing barriers and answering the above questions.

[1] Tellus has seen this occur in a similar performance based model in the chemical industry called Chemical Management Services (see www.checmialstrategies.org). More broadly, it is consistent with the diffusion of innovative business models in general.

Next Steps: Massachusetts Project Phase II

This study was designed as the first stage in a two-phased project. The proposed second phase would go beyond "proof of concept" and seek demonstrable change in growing RM demand and service markets by providing direct contract assistance to organizations that rely on disposal and/or recycling contracts, building RM supplier capacity, and developing tools and guidance materials. This will be accomplished by executing RM contracts within organizations that rely on traditional waste and disposal contracts.